



Educators Vince Wray (left) and Richard McIsaac work with INL researcher Hope Lee as part of INL's teacher internship program

Teachers 'get real' with summer laboratory experiences

By Brett Stone, *INL Communications & Governmental Affairs intern*

Vials bubble with different-colored liquids, machines whir and computers surround Richard McIsaac, a recent college graduate, in a laboratory at the Idaho National Laboratory Research Center (IRC).

His mentor, INL's Dr. Hope Lee, stands next to him and together, the two prep glass slides. They are testing groundwater samples from regional sites contaminated with fuels and dry-cleaning chemicals.

Eight-weeks at Lee's side have given McIsaac, an intern with INL's Pre-Service Teacher program, a new perspective that he plans to take into the high school science classroom where he will teach this fall.

"She has turned me into a scientist," McIsaac said. "This has been a really good experience for me to be in a lab and work on a project. I want to give my students a similar experience."

Those are words that Vince Wray, a veteran educator who administers INL's teacher internship, relishes. They also are why INL brings in roughly a dozen teachers each year to intern at the lab through its Teaming Teachers with INL (TTI) and Pre-Service Teacher internship program (PST).

The goal is to help educators master the subjects they're teaching and studying and find ways to spark their students' interest in science.

"So much of the classroom instruction is done out of a book that we want to try to change that," Wray said. "We want a bigger part of the classroom instruction to be hands-on, for the kids to be doing things, to be involved in a lab."

Besides working in labs or in the field, the teachers who participate in the INL programs also learn how to take their hands-on experience back to their classrooms. They regularly meet with Wray, a master teacher, and others to brainstorm ways to do that.



Educator Vince Wray (left) and college interns Erin Hafila and Isaac West work on updating anemometer tower.

"During the summertime, we have what we call working lunches," Wray said. "We sit down with all the teachers together and go through techniques and ways to translate this experience back into their classroom, how to put it into a hands-on setting so the kids aren't just reading about scientists that are cutting edge in their field like Hope [Lee] but actually getting a real experience."

And teachers participating in the programs aren't limited to indoor lab experiences. On a hill dotted with Junipers and towering wind turbines, Brent Cummings, a young science teacher from Buhl, Idaho, believes his experience with INL's TTI program will make him a better educator.

Cummings worked with a team of college interns to take down a wind power research tower and update its instruments. The anemometer tower measures and records wind speed and direction, and is a key to determining the viability of wind-farm locations.

"It's important for [students] to understand how what they're learning applies to the real world, how it could affect their future," said Cummings. "We're surrounded by energy, electricity and we use it every day, but not very many people know how it really works."

Collaborating with educators

Idaho National Laboratory's eight-week ["Teaming Teachers with INL"](#) program pairs K-12 teachers from across the nation with INL scientists and researchers to build confidence and deepen their knowledge of science, mathematics, engineering and technology and hone their instructional skills, according to the program's website.

The lab's [Pre-Service Teacher program](#) gives beginning teachers a once-in-a-lifetime chance to work on research projects at the lab with a mentor and plan how to apply their experience in the classroom with the guidance of a master-teacher.

"[The PST teachers] are smart, willing to learn — even when it falls outside their area of interest or major — and they apply themselves 110 percent," said Dr. Hope Lee, an INL microbiologist. "The program benefits my research because I have hands in the lab to do the research I don't have time to do."

As Cummings spoke, what will soon be the largest wind farm in Idaho, the Goshen North project, was being constructed behind him. Along with the spinning turbines, the farm has brought issues of electricity, economics, wildlife and jobs to the public's attention. Cummings feels students should understand all those issues.

"They need to be informed citizens," Cummings said. "Just helping them understand how these things that they use every day function and their importance and the issues surrounding them, that will just help them be more prepared as citizens."

More experienced teachers benefit from the INL programs as well.

Skyline High School's Gary Brown, an Idaho Falls teacher with 44 years of experience, is helping take the raw numbers from the anemometers and use them to create meaningful lesson plans. The plans and activities will help students understand the connection between things like wind speed, turbine height and kilowatts produced. All of the materials, said Brown, will be made available to the public via INL's website.

"In any class you try to link what you're doing to things outside of the class," said Brown. "And every time you can gain some kind of experience that you can relate to, it's that much better and keeps [students] more involved."

Wray believes the impact of the INL program is huge. Teachers like McIsaac, Cummings and others have the potential to influence hundreds of students.

"My hope is over the next 10 years, [McIsaac] influences 120 kids a year," Wray said. "That's 1,200 kids that he's influenced over a 10-year period by sharing this experience with them."

[Feature Archive](#)

Did you know?

Besides helping to work on the anemometer towers, Cummings also attended the [i-STEM](#) (Idaho Science, Technology, Engineering and Math) conference, where he received a wind-tunnel kit developed by the college interns in his group.

"We built it as a demo for teachers to use for their students," said Michael West, one of the interns. The electrical engineering major from University of Idaho explained that teachers "get these kits that come with all the stuff to build [miniature turbines] and then they can put them in the wind tunnel and test the power output."